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PHYSICIAN-INDUCED DEMAND:
THE LITERATURE SINCE 1977

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By:

Jerry Cromwell, Ph.D.

RESEARCH DIVISION

PENNSYLVANIA BLUE SHIELD
Camp Hill, Pennsylvania 17011

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I. INTRODUCTION

Can physicians, under certain circumstances, induce patients to undertake more medical care than they otherwise might have? Does this ability, and the attendent desire to do so, have anything to do with the extent of physician competition in an area? If the answer to both of these questions is affirmative, then current policy strategies relying on market forces to attenuate cost inflation may be sorely frustrated. If, on the other hand, physicians exert little control over prices and utilization, then the rapid outflux of recent medical school graduates may not be as inflationary as it would seem.

Economists have been studying the subject of demand inducement in the medical sector for over a decade now, beginning with Feldstein's (1970) pioneering work. Sloan and Feldman (1978), in a watershed paper done for the Federal Trade Commission, conducted an exhaustive theoretical and empirical critique of this literature through 1977. Since then many new studies have appeared, materially adding to the body of knowledge on the topic. A review of the literature up to 1978 was produced as an earlier report in this project series (Juba, 1979). The purpose of this paper is to update the earlier review produced under this project, showing how theory and empirics have evolved more recently.

A. SUMMARY OF LIMITATIONS OF PRE-1978 LITERATURE

It is appropriate and useful to begin by reviewing the limitations of the early studies to see how well the more recent literature has performed

in filling the gaps. Based on the Sloan-Feldman paper and thoughtful comments provided by Yett (1978) and Reinhardt (1978), the major drawbacks to pre-1978 work were:

(1) Inaccurate measurement of physician fees and area utilization;
(2) Inadequate consideration of nonprice competition;
(3) Incomplete adjustments for confounding demand and supply variables;
(4) Insufficient development of an alternative theoretical paradigm explaining demand inducement;
(5) Inadequate consideration of disequalizing forces in the physician services markets; and
(6) Insufficient analysis of backward-bending supply.

Limitation (1) covers a host of problems: (a) the use of physician self-reports rather than actual charges and services performed; (b) use of list rather than final transactions prices, adjusted for bad debts and reduced fees; (c) use of nominal charges, unadjusted for cost-of-living differences; and (d) use of counties, or other geographically circumscribed locality, to measure utilization rates, thereby ignoring the possibility of patient inter-area migration for care.

Limitation (2) reminds us that, as with all services, extensive nonprice competition occurs among physicians in the overall area of quality as well as in practice amenities such as shorter waiting times, auxilary staff attention, and time actually spent with the doctor.

Limitation (3) involves a host of difficult-to-measure factors, in addition to those potentially related to physician inducement, that could be affecting demand. This includes such factors as expanding insurance coverage, changing health status and attitudes, increased threat of malpractice suits, and technical change.

Limitation (4) reflects a legitimate concern of neoclassicists that demand creation is not so much a theory as an *ex post* rationalization of perverse relationships among physician prices, earnings, workloads, and supplies; that a formal set of assumptions, behaviors, and internally consistent predictions are required before the inducement paradigm can be considered a true alternative to traditional demand/supply models.

Limitation (5) argues that nearly all previous studies have assumed observed prices and quantities to be the result of single-period equilibria when, in fact, prices may be inflexible to rapidly changing market forces, resulting in significant gaps between demand and supply *ex ante* and long-term adjustments.

Finally, limitation (6) points out the inadequate attention given to the possibility that backward-bending supply, which is part-and-parcel of a target income theory, may explain many of the noncompetitive findings of previous studies, without resort to demand inducement.

II. TRENDS IN THE INDUCEMENT LITERATURE SINCE 1977

Cursory review of the post-1977 literature shows at least twenty to thirty substantive papers addressing the general topic of physician inducement in one way or another (not counting a correlative literature on hospital utilization). Many of the pioneers remain active in the field, while neophytes also have joined the search, trying to improve both theory and methods. It is beyond the scope of this effort to conduct an exhaustive review of the new material similar to what either Sloan-Feldman or Juba have previously done. Instead, we have selected a few exemplary contributions that we think shed light on important aspects of the problem. Brief synopses of these are presented below. A more complete, but certainly not exhaustive, bibliography is included at the end of this paper.

A. SYNOPSES OF SELECTED ARTICLES AND REPORTS

The 1978 Supplement to the Journal of Human Resources included many excellent articles on physician behavior, two of which were directly on the subject of inducement. Fuchs (1978), extending his earlier work on the subject, explored the relationship between area surgery rates, physician prices, and physician supplies. Several new improvements were made over earlier work, including: (a) recognition of inter-area movement for care (i.e., physicians acting as magnets, attracting patients from underserved areas); (b) treating physician supply as endogeneous and testing for a feedback effect of prices on physician location;

(c) deflating fees for area cost-of-living; and (d) testing the inducement effect for different educational groups.

Health Interview Survey data for 1963 and 1970 were aggregated to 22 regional/metro areas, adjusted for bordercrossing, and then were used to estimate a two-stage model, where physician supplies were predicted in a first stage, and the predicted supply value used to estimate structural demand equations. Findings supported the inducement hypothesis in a dramatic way, both in terms of surgery rates (an extra surgeon in an area added 40-60 operations per year) and in terms of fees (a _positive_ supply elasticity of .5). The inducement effect also appeared to be larger where education was lower and resulted in higher volumes of less urgent kinds of operations.

While the Fuchs study has been criticized and improved upon in a number of ways, its findings still stand as _prima facie_ evidence of market failure -- at least for surgery -- and are difficult to explain away.

Green (1978) presents a very different approach to the inducement question, although he uses Fuchs' (earlier) data to test his model. Primary focus is given to the relative impacts that physician supplies and patient income should have on physician workloads and fees under a monopolistically competitive regime. Assuming that demand is iso-elastic with respect to both supplies and income, the author -- using very terse, comparative statics methods -- shows that, without inducement, the relative impact of each should be the same on workloads and fees. Using Fuchs' data, he tests this proposition, and although the relative coefficients are very different in appearance, a statistical test proves inconclusive. If demand is assumed to be linear in supplies and fees (and

therefore not iso-elastic) the discrepancy in relative impacts is further reduced. The lack of estimation details and the imprecision of the test-of-discrepancy make it difficult to put great weight in these findings as anti-inducement evidence.

In the last section of Green's paper, he considers the possibility of market disequilibrium, a problem generally ignored after Feldstein's (1971) classic attempt in the early 1970s. Green argues against Feldstein's simplifying assumption that observed utilization is determined by the "short-side" -- viz., demand-determined for prices above equilibrium, and supply-determined for below-equilibrium prices. Essentially, if prices are below equilibrium, physicians may attempt to fill part of the excess demand gap by working harder, filling more of the gap when it's larger and creating a positive correlation between supply and price. Under this scenario, simplistic equilibrium models may ascribe higher fees in physician-rich areas to inducement rather than to a "generosity" motive in physician-scarce areas. (Yett, 1978, made the identical point, albeit in a very different way, in his review of the Sloan-Feldman 1978 review of the literature.) Green's paper suggests that a stronger test of inducement would come from a segmenting of markets into above- and below-equilibrium, and seeing if a positive correlation between supplies and prices occurs in both regions. There should be no plausible reason for greater output, holding price constant, in areas of excess supply.

This suggestion is taken up in a subsequent study by Mitchell and Cromwell (1980). Following the lead of Fuchs, the authors put together a continuous, eight-year data base (1969-76) of HIS responses for some 350

counties or Standard Metropolitan Statistical Areas (SMSAs). Both equilibrium and disequilibrium models were tested using simultaneous equation techniques; price, quantity, workloads, and location all were considered endogenous. Surgery rates were further decomposed into total versus elective, the latter presumably more inducible.

Holding insurance, health status, income, and other variables constant, the authors found positive utilization elasticities for surgeon supplies: (.1 for total surgery and .13 for elective surgery) as well as on price (.36). Reduced-form price elasticity with respect to supplies turned out to be much higher than short-run elasticities, which suggests a counter-theoretical equilibrating process. Since evidence, both anecedotal and otherwise (see Vahovich, 1977), is fairly strong on backward-bending physician supply, the authors considered this possibility in rationalizing their findings. Surgeons in large SMSAs were, in fact, found to have surgical workloads that fell as fees rose.

Backward-bending supply coefficients derived from cross-sectional data could be an artifact of market disequibrium, however, as surgery rates are supply constrained in surgeon-scarce areas. The authors segmented their 350 areas into high and low supply regimes and reestimated their model. In physician-scarce areas, surgery rates were dominated by supplies, as expected (health status also had an effect but no income variables). Nevertheless, even in surgery-rich areas, supply still showed a positive effect on fees, although the effect was reduced (slightly) from the pooled results. The authors conclude that "the usual competitive mechanism of price adjustments to eliminate demand-supply gaps appears strangely altered, if not altogether missing, in the market for surgical

services" (p. 19).

Stano (1978) also considers the possibility of disequilibrium and discrepancies between *ex ante* and *ex post* demands and supply. What may be a disequilibrium transaction curve, the author claims, could be wrongly interpreted as an *ex ante* demand curve with inducement, if prices were inflexible. Stano assumes prices are rigid downwards due to collusion and/or collective actions of physicians who dominate insurer groups like Blue Shield. Fees in certain instances may be below equilibrium, but rigid upwards, if physicians in shortage areas are hesitant to raise fees out of charitable motives, fear of regulation, or the desire to maintain patient queues.

Using Fuchs and Kramer (1972) data, the author estimates a five equation model with utilization, average price, and insurance coverage as endogenous variables. Two stage least squares methods are used. The results show a significant positive inducement effect, although only when per capita income is dropped. Workloads also are shown to have a negative effect on prices, implying that physicians raise prices to offset falling demand.

The Bureau of Health Manpower (BHM/HRA/U.S. DHHS) has published a collection of excellent articles, *The Target Income Hypotheses* (1980), all of which are essential reading on the subject. Only a few that are most notable for content or approach relative to present purposes are reviewed here, but all are worth reading.

Ramsey (1980) provides a concise review of the physician behavioral literature on inducement, beginning with Feldstein (1971), and then goes on to discuss criteria relevant to a theoretical and empirical evaluation

of competing standard neoclassical and inducement models. These criteria are presented as:

- internal consistency, regarding sub-hypotheses;
- external consistency, requiring that extensions of the original model are consistant with hypotheses;
- generally, requiring that a preferred model explains more observed phenomena;
- preciseness, particularly regarding the number of refutable hypotheses and the sign and magnitude of the predictions;
- phenomenality, i.e., ability to be tested with observed data; and
- empirical dominance, requiring superior verification rates on a battery of tests.

Using these criteria, Ramsey develops a profit-maximizing model of physician behavior in variance to Reinhardt (1972), assuming physicians will hire other physicians or sell their own time in order to maximize practice profits along with physician utility. This assumes, of course, no distaste for management or salaried employment which are key to Reinhardt's theory.

The author then examines two forms of the inducement model, following the lead of Sloan and Feldman (1978), and rejects them both on several theoretical and empirical grounds. Primary among his arguements is the failure of pure inducement or target income models to explain positive correlations between supply, prices, and utilization which might already

be explained by the standard model, adjusting for non-price competition and short-run response lags.

The last section of the paper addresses important estimation issues like identifiability of the demand function, omitted variables like technical change, intertemporal and cross-sectional variations in specialization which systematically affect prices, uneven insurance coverage, and migration for care.

Pauly and Satterthwaite (1980) present a competing theory to explain the positive correlation between physician fees and supplies, one they call the "increasing monopoly" model. The increasing monopoly enjoyed by the physician is hypothesized to derive from the growth in practitioners relative to patients (or more specifically, geographic area), which reduces patient information about any single alternative physician and ties them more securely to their current physician. Under this unusual hypothesis, demand would become less, rather than more, elastic with growing supply, which is strictly counter to the standard monopolistically competitive model.

The authors then specify a six-equation model and test the inducement/increasing monopoly models, using 1973 American Medical Association (AMA) fee and census data on primary care physicians in the 100 largest SMSAs. A two stage least squares method is used with physicians per square mile, female-headed households, and housing turnover rates used to proxy the lack of consumer information. The results strongly support the increasing monopoly model over the target income/inducement model, except when controlling for cost-of-living. Primary care physicians per capita, which was positively related to

equilibrium prices before informational proxies were included, turned negative when variables like physicians per square mile were added. Mitchell and Cromwell (1980) were not able to reproduce these results for surgeons, however, suggesting that the focus on primary care may explain the reversal of coefficients (see Sloan, 1981).

From a policy standpoint, there seems to be little difference between the increasing monopoly and inducement models. Physician maldistribution exacerbates fee inflation in either case. The authors emphasize, however, that a focus on improved consumer information on physician fees and quality may have definite cost-reducing payoffs if their model proves correct. They are admittedly silent, on the other hand, in how to accomplish this.

Held and Manheim (1980) provide a fascinating look into the inducement question from a very different perspective than all other empirical studies. Based on medical claims data from the Province of Quebec for 1971-75, they were able to test the relationship between physician supply, utilization rates, and costs for the treatment of a single diagnosis (specifically, essential benign hypertension). Casemix variation is automatically controlled for under this method, and illness severity cannot be used to explain higher prices in physician-dense areas. Moreover, because Canada has complete health insurance coverage, systematic variations between gross and net prices do not exist to confound interpretation of the inducement effect.

Descriptive statistics showed little variation in office visits and costs per year in treating hypertension across income and location. Treatment costs per patient-year rose about 10 percent annually, although

office visits per year were relatively constant. What is observed is a rapid shift from less to more complex visits: in 1971-72, complex exams comprised 9.5 percent of all hypertension exams; but by 1974-75, the percentage was 27.7 percent. The implication of this finding is that physicians can, and may in fact choose to, upgrade (either in fact or on paper) the nature of the visit in order to justify a higher reimbursement. This behavior can be considered insurer-motivated inducement.

The authors then estimate three quasi-reduced-form equations for total hypertension costs, office visits, and office visits plus consultations for 13,000 hypertension beneficiary-years (i.e., several thousand patients over four years). Beside concentrating on a single diagnosis, the authors went through considerable effort to econometrically control for secondary diagnoses like heart disease and hypertension. Variables are stepped in groups to isolate marginal effects, which is very illuminating. For example, both specialists and GPs per capita are positively related to treatment costs per year, *ceteris paribus*, although specialists/population ratios are negatively related to visits and consultations. When variables like the number of consultations are included (as exogenous, although they should be simultaneously determined), however, the specialist supply effect on costs also turns negative. Although the authors offer no explanation for the very large effect consultations have on costs ($41.75 per consult), it would appear that all of the positive specialist effect on costs is coming through referrals. Although total visits are thereby reduced, costs are higher in specialist-rich areas of the province because of the relatively high cost of consultations.

Another conclusion of the authors implies that the inducement effect, even if positive, "is not as serious as one might at first suppose," because of the low elasticities. Viewed another way, their results hold out little hope for growing physician supplies stemming cost inflation through competition.

Yett _et al._ (1980), in a methodological tour-de-force, develop the basic two-market physician demand model for private indemnity and UCR patients, seen elsewhere in the literature (Sloan, _et al_., 1978; Paringer, 1980; Mitchell and Cromwell, 1981). The model explicitly considers the possibility of segmented private and public (i.e., UCR) demand, giving estimable structural demand and profit-maximizing optimality equations for perfect and monopolistic competitors. The model also considers the possibilities that UCR-participating physicians raise charges to increase the next period's allowable charge, and that physicians employ markup pricing.

Claims data on a limited panel of 200-300 physicians in two Blue Shield Plans over four years are used to estimate the simultaneous model. Two stage least square estimation techniques are employed, with a dummy variable for each physician (making it a fixed-effect model) to capture unobserved information on non-Blue Shield output and practice characteristics (e.g., length of office visit). A fixed-effects approach to the unobserved amenities-cum-output problem works a unique departure from other work.

The results shed light on many interesting aspects of physician revenue and cost behavior (e.g., marginal cost was found to be negatively sloped). Demand was found to be quite price elastic, indicative of a

monopolistically competitive market and implying that practitioners must consider (or are affected by) the pricing behavior of other physicians. Little evidence was found supporting an inducement effect among UCR-participants; however, a significant, positive correlation was found between physician supply and demand for nonparticipants in one of the two plans. Several specifications of the UCR-inflation-in-fees relationship provided some evidence that physicians manipulate future allowables through current fees, although the reaction function may be more complex than in Hadley and Lee (1978).

Although the data for their analysis were limited to just two areas and a few physicians, Yett *et al*. make several important theoretical and econometric contributions to the literature. Unfortunately, advanced economic training is required in order to take full advantage of this paper.

Lee and Hadley (1981) have taken the simpler insurance-adjusted demand models a major step further by specifying a sophisticated, multiperiod physician profit-maximization model that explicitly incorporates incentive to inflate current list fees to raise future Medicare (and other) payments. It may well be in the physician's best interest to keep current fees artifically high to assure maximum insurance reimbursement under UCR methods. Medicare and Medicaid claims data for 1,750 GPs, surgeons, and internists for the 1972-75 period are used to test this and other policy actions relevant to physician fee inflation, including the inducement effect.

Many of the author's findings pose serious questions for public policy. First, both surgeons and internists were found to raise prices

when the growth in Medicare/Medicaid reasonable payments was slower. Second, while physician supplies proved to be negatively related to prices (an anti-inducement finding), the effects were very low (about .05 percent). Little reliance, they conclude, can be placed on competition to control burgeoning public budgets. And third, broad physician price controls, as experienced in the 1971-74 period, did slow the growth in prices. This was accomplished without serious physician withdrawal from Medicare/Medicaid because all insurer payments were being limited simultaneously.

Taken as a whole, this paper speaks strongly against the role of unbridled competition in limiting physician expenditures. This is particularly true if Medicare and Medicaid continue to: (a) allow physicians to price discriminate, charging what the various insurers are willing to pay, and (b) reimburse them based on list charges rather than a more controlled basis.

In a very recent effort, Sloan (1981) estimated reduced-form fee equations with physician supplies as one explanatory variable. This effort was exceptional in that seven individual fees were used (office visit, hospital visit, two exams, and three surgical procedures) instead of just one; and an index of medical school distinction was included, along with variables for practice size and incorporated status and several indicators of practice costs, including the average malpractice premium. The data base for the estimation was the 1977-78 pooled HCFA/NORC physician survey, giving roughly 5,850 observations (less for the individual procedures). All specialties were pooled, with the physician-population ratio defined for the relevant specialty. Insurance

coverage is based entirely on survey responses, with a predicted weighted fee schedule derived from first-stage regressions.

Physician supply coefficients were uniformly negative and usually statistically significant in the fee equations. The results are somewhat sensitive to the way in which insurance coverage is measured, but even so, they provided the strongest consistent support for competitively determined fees in the inducement literature. Except for the follow-up office visit, the elasticities were low -- on the order of .05 to .10. The office visit elasticity, on the other hand, implied a 4.4 percent decline in fees for every 10 percent increase in physicians per capita. Elasticities fall dramatically, however, when feedback effects of prices on physician location are taken into account.

Other explanatory variables of interest relative to fees included insurance coverage (elasticities = .25), malpractice premiums (elasticity = .10), and physician age, which showed high (or higher) fees for the youngest physician cohorts, even holding credentials, specialty, location, and quality of medical school constant. This result Sloan attributes, in part, to UCR methods that penalize older physicians who established fee profiles under uninsured regimes.

Auster and Oaxaca (1981) make a valuable contribution to the econometric literature on demand inducement by drawing out the implications of various model specifications on identification of the supply-induced demand (SID) effects. Inclusion of relative physician supply (i.e., physicians per capita) in a demand equation, the author's argue, can result in an estimable (identifiable) inducement coefficient only if output, or visits, are produced under various combinations of

physician time and other inputs; otherwise output is tautologically related to supply (e.g., doubling the number of physicians leads to a doubling of output). Moreover, if multiple input production functions are the case, then there must be substantial inter-area variation in input price ratios to assure significant variation in input combinations and visits per physician. The authors then calculate coefficients of variation for several medical and other clerical wages and employment ratios for 22 SMSAs. In this, they find relatively little variation, pointing to the econometric difficulties in statistically identifying an inducement effect from cross-sectional data.

Auster and Oaxaca also point out that atheoretical results for price and income coefficients derived from estimating conventional equations could also be inferential evidence of inducement. Neoclassical theory permits price and income to have negative and positive signs, respectively, when regressed on quantity; this is the usual case. Positive coefficients for both price and income, however, would imply that medical care were a Giffen good, like potatoes, which is difficult to accept. In this case, high inducement elasticities could explain such a finding.

B. SUMMARY OF MAJOR CONTRIBUTIONS

It should be obvious, even from these relatively few papers, that considerable effort has been devoted to redressing the major limitations found in previous work. The major recent contributions are summarized below.

First, many different data sources have been used to measure price and quantity besides physician surveys, including household interviews and insurer claims. The latter are particularly useful as they should reflect actual charges and procedures performed in an unbiased manner.

Second, it has become more-or-less standard to deflate charges for cost-of-living differences, making real prices comparable across physician markets (as well as implicitly adjusting for the effects of unobserved area demand factors).

Third, many different approaches have been used to address the patient migration, or bordercrossing, problems. These include a focus on large SMSAs, grouping of smaller counties into larger market areas, and econometrically adjusting for physician supply in contiguous markets.

Fourth, several attempts have been made to adjust for quality and amenity differences in charges, either explicitly through hedonic fee equations a la Sloan (1980-81) and Feldman (1979, 1980), or implicitly through econometric estimation (Yett et al., 1980) using physician-specific dummy variables.

Fifth, much more attention has been given to unobserved, or difficult-to-measure variables in the demand equation -- variables like the breadth and depth of insurance coverage. Use of Blue Shield and Medicare claims data have made a considerable contribution here as well, although very few studies have had access to them.

Sixth, a great deal of new theoretical work on the topic of physician markets and competition has been completed, further elucidating the direct and indirect forces acting on individual practitioners. Much of this work has been very much in the neoclassical vein, however, essentially as

modifications of the standard model (e.g., Pauly-Satterthwaite's "increasing monopoly" model).

Seventh, a select few studies have considered dynamic disequilibrium conditions, either for private charges and physician location (as in Mitchell and Cromwell, 1980, and Stano, 1980), or in trying to influence future Medicare and Blue Shield allowables (as in Yett, 1980, and Lee and Hadley, 1981).

Finally, some consideration has been given to the implications of backward bending supply -- primarily in theoretical elaborations of the target income model (as in Sweeney, 1979, and Mitchell and Cromwell, 1980).

III. ASSESSMENT OF RECENT ADVANCES

A. OVERVIEW OF FINDINGS

Extensive as the new literature is, in theory as well as in practice, it is safe to say that both the orthodox and inducement theories continue to claim many adherents. Proving beyond a shadow of a doubt that physicians can and do shift demand under competitive pressures, as Feldstein and Evans thought they had done, has been frustrating to those imbued with the "flawed agency" paradigm of the physician-patient relationship. Neoclassicists have been similarly frustrated by their failure to convert demand creationists based on either comparative statics mathematics or negative, reduced-form price elasticities of supply.

In spite of these frustrations and disappointments, this work has not been without reward, for important and policy-relevant by-products have been spun off from this philosophical and quantitative competition. At the risk of oversimplfying, and possibly also of incurring the wrath of overlooked or misinterpreted contributors to the field, the following inferences may be drawn from the literature, recognizing that many do not specifically pertain to demand creation, but rather to more mundane matters:

(1) Almost universal agreement now exists among investigators that physicians exert some limited monopoly powers. By this is meant that individual physicians are price setters for the most part and that charging above-average fees does not result in dramatic losses in patients.

(2) While physicians do compete in terms of quality and amenities as well as price, nonprice competition alone explains relatively little of the observed variation in fees.

(3) Health insurance in general adds significantly to the demand for physician services, probably beyond medically necessary levels. Moreover, the widespread use of UCR and CPR reimbursement methods encourages physicians to artifically raise prices to third parties such as Medicare.

(4) If price competition does exist among physicians, it is most greatly felt by general practitioners. Specialist markets appear to be much less exposed to competitive demand forces -- in part because of better insurance coverage for their services. Scarcity may also explain their insulated position although general surgeons are a notable exception.

(5) Greater physician supplies, having only a minimal depressing effect (if at all) on charges, will likely result in continued rapid growth in public and private outlays on their services, particularly with the phasing out of general practitioners, whose fees are lower and who provide much of the preventive medicine.

(6) As physicians become increasingly specialized, there will be a tendency to increased consultations, which add to the cost of care and reduce continuity, albeit along with some (unknown) improvement in quality.

(7) A significant part of the attempt to defend the role of competition, or to deny creationist paradigms, has fallen back on semantics or on repairable flaws in the competitive system. Demand creation, for example, would not necessarily exist if physicians provided care of zero medical value so long as patients (or their insurers) are willing to pay for it. Or competition exists if greater physician supplies lead to lower prices, even if the declines are miniscule. Or greater supplies lead to less consumer information on price-quality variation, allowing the physician more monopoly power -- not less as would be expected under standard monopolistically competitive models.

B. WHERE WE ARE NOW

Almost everyone would agree with the additional observation that future research is unlikely to radically alter the relative size of the two camps. Still, it may be instructive to point out remaining gaps in our knowledge and methods. First, no measures of prices, either self-reported or using claims data, have considered the possibility of reduced fees and bad debts driving a wedge between list and transactions prices. Nor are they insignificant. Just counting patient out-of-pocket debts and not third party denials, one study estimated them to be 11.1 percent of gross physician income, ranging from nearly 10.9 percent in SMSAs to 12.8 percent in rural areas (Sloan, Cromwell, and Mitchell, 1978, Table 9-1). To the extent that these are positively correlated with physician competition, debts can bias empirical work in favor of creationists.

Second, while admirable efforts have been made to quantify quality and amenity differences, they remain limited in two key respects. No measures currently exist on physicians' diagnostic and therapeutic capabilities, only rough proxies like board certification and medical school training. Nor have those measures that do exist been used with actual charge and procedure data -- only with physician self-reports.

Third, very little dynamic modeling has been done using a large sample of physicians over several years, primarily because of the lack of data. Cross-sectional variation is required in order to capture major differences in physician supplies, while enough time-series data are needed to adjust for sluggish prices. A few studies have had decently

good cross-section time-series but have failed to estimate the model in dynamic form, except for subsectors such as UCR-allowables.

Finally, creationists have yet to present a fully consistent inducement model that accounts for: (a) why and when a physician creates demand; (b) exactly how it is done, e.g., revisits, higher charges, more ancillaries; (c) what constraints are operative; (d) why other demand variables like income and insurance conform to neoclassical expectations when creation should attenuate their effects (e.g., physicians practicing in low income areas should be able to create enough demand to wipe out positive correlation between income and utilization); and (e) how creationism might differ by specialty or other market factors.

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